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10/579,499	05/16/2006	Kikuo Makita	8028-1059	1614

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EXAMINER	
PYO, KEVIN K	
ART UNIT	PAPER NUMBER
2878	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/579,499	MAKITA ET AL.	
	Examiner	Art Unit	
	Kevin Pyo	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 February 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 17 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Toru et al (JP 6-034894).

With respect to claim 17, Toru et al discloses a light control apparatus comprising: a splitting device (2) for splitting an input signal light (light propagated on a main transmission line 1) to obtain a monitor light (light detected by a photodetecting means 6) which is a part of the input light; a photoelectric conversion device (6) for converting the obtained monitor light into an electric signal; and an opening and closing device (4) that close the optical transmission path by receiving the electric signal as a drive voltage so that the output light is cut off when the input light exceeds a threshold (abstract).

Regarding claim 24, the limitation therein is disclosed in abstract.

3. Claims 25, 28, 32 and 34 are rejected under 35 U.S.C. 102(e) as being anticipated by Takeuchi (7,049,574).

With respect to claim 25, Takeuchi discloses a .light control device comprising: nonlinear optical medium (9) as a splitting device for splitting an input signal light (8) to obtain idler

photon (5) as a monitor light which is part of pumping light (8) as the input light; laser (7) as a transmission device for transmitting an input signal light (8); photon number detector (2) as a photoelectric conversion device for converting the obtained monitor light (5) as part of the input signal light into an electric signal; and gate device (4) as an. opening and closing degree control device for cutting off the optical transmission path for transmitting the input signal light by receiving the electric signal from photon number detector (2) via the controller (3).

With respect to claim 28, Takeuchi discloses gate device (4) as a micromachine.

With respect to claim 32, Takeuchi discloses the cutoff device in the form of gate device (4) that holds an opened and closed state based on the electrical signal and controller (3) as a device for indicating the held open and closed state.

With respect to claim 34, Takeuchi discloses a light control device comprising: nonlinear optical medium (9) as a splitting device for splitting an input signal light (8) to obtain idler photon (5) as a monitor light which is part of pumping light (8) as the input light; laser (7) as a transmission device for transmitting an input signal light (8); photon number detector (2) as a photoelectric conversion device for converting the obtained monitor light (5) as part of the input signal light into an electric signal; and gate device.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 26, 30, 31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi.

Takeuchi discloses the device as described in the discussion of claims 17, 20, 24-25, 28, 32, & 34.

With respect to claim 26, Takeuchi discloses the device as previously described, but does not explicitly disclose that photon number detector (2) as the photoelectric conversion device is a semiconductor photovoltaic device with a stack-type structure. The use of semiconductor photovoltaic devices is known in the art and would have been obvious to one of ordinary skill in the art because semiconductor photovoltaic devices provide for adequate light sensing capabilities at a reasonable cost and relative ease of manufacture.

With respect to claim 30, the modified Takeuchi discloses the device as already discussed, but does not disclose the use of a voltage source. The use of a voltage source is known in the art and would have been obvious to one of ordinary skill in the art because the voltage source would allow for additional enhancement or control of the signal.

With respect to claim 31, the modified Takeuchi discloses the device as already discussed, but does not disclose second splitting device and disposition on a single planar optical circuit. The use of the additional splitting device would have been known in the art as an obvious duplication of parts and the single planar optical circuit is known in the art and obvious to one of ordinary skill in the art because this would reduce the size of the device.

With respect to claim 33, Takeuchi discloses the device as previously described, but does not explicitly disclose that photon number detector (2) as the photoelectric conversion device is a semiconductor photovoltaic device with a waveguide structure. The use of semiconductor

photovoltaic devices is known in the art and would have been obvious to one of ordinary skill in the art because semiconductor photovoltaic devices provide for adequate light sensing capabilities at a reasonable cost and relative ease of manufacture.

6. Claims 18, 20, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toru et al.

Toru et al discloses the device as described in the discussion of claims 17 and 24.

With respect to claim 18, Toru et al discloses the device as previously described, but does not explicitly disclose that the photoelectric conversion device is a semiconductor photovoltaic device. The use of semiconductor photovoltaic devices is known in the art and would have been obvious to one of ordinary skill in the art because semiconductor photovoltaic devices provide for adequate light sensing capabilities at a reasonable cost and relative ease of manufacture.

With respect to claim 20, although the device of Toru et al does not disclose that the optical shutter (4) is using a micromachine. The use of a micromachine is well known in the art and would have been obvious to one of ordinary skill in the art because the use of a micromachine would allow an optical shutter to perform opening and closing operation with less drive power.

With respect to claim 22, the modified Toru et al discloses the device as already discussed, but does not disclose the use of a voltage source. The use of a voltage source is known in the art and would have been obvious to one of ordinary skill in the art because the voltage source would allow for additional enhancement or control of the signal.

With respect to claim 23, the modified Takeuchi discloses the device as already

discussed, but does not disclose its elements are disposed on a single planar optical circuit. The use of the single planar optical circuit is known in the art and obvious to one of ordinary skill in the art because this would reduce the size of the device.

7. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toru et al in view of Newman (5,086,329).

With respect to claim 19, the modified Toru et al discloses the device as previously described, but does not explicitly disclose the use of a semiconductor photovoltaic.device having a nipi-type multijunction structure. However, the use of a nipi-type multijunction structure is known in the art because Newman discloses that NIPI structures have been used in optical structures (see Newman column 1, lines 60-61). To modify the teachings of Toru et al with those of Newman would have been obvious to one of ordinary skill in the art because the structure would allow for accurate detection with a relative ease of manufacture.

8. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi in view of Newman (5,086,329).

With respect to claim 27, the modified Takeuchi discloses the device as previously described, but does not explicitly disclose the use of a semiconductor photovoltaic device having a nipi-type multijunction structure. However, the use of a nipi-type multijunction structure is known in the art because Newman discloses that NIPI structures have been used in optical structures (see Newman column 1, lines 60-61). To modify the teachings of Takeuchi with those

of Newman would have been obvious to one of ordinary skill in the art because the structure would allow for accurate detection with a relative ease of manufacture.

9. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toru et al in view of Pearson (7,148,469).

With respect to claim 21, the modified Toru et al discloses the device as previously described, but does not explicitly disclose the use of an absorption-type modulator or a refractive index-type modulator. The use of these types of modulators is known in the art because Pearson discloses a device with optical shutter (28) and discloses that the shutter can be an acousto-optic modulator (AOM) (see Pearson column 7, lines 8-11). To modify the teachings of Toru et al with those of Pearson would be obvious to one of ordinary skill in the art as a functional equivalent because the acousto-optic modulator would provide for effective light blocking with effective control.

10. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi in view of Pearson (7,148,469).

With respect to claim 29, the modified Takeuchi discloses the device as previously described, but does not explicitly disclose the use of an absorption-type modulator or a refractive index-type modulator. The use of these types of modulators is known in the art because Pearson discloses a device with optical shutter (28) and discloses that the shutter can be an acousto-optic modulator (AOM) (see Pearson column 7, lines 8-11). To modify the teachings of Takeuchi with those of Pearson would be obvious to one of ordinary skill in the art as a functional equivalent

because the acousto-optic modulator would provide for effective light blocking with effective control.

11. Applicant's arguments filed on 2/19/2008 have been fully considered but they are not persuasive.

With respect to claims 17-24, applicant's argument regarding Takeuchi is deemed to be moot since the new ground of rejections necessitated by the applicant's amendment are made in this Office action.

With respect to claims 25-34, the main point of applicant's argument is that Takeuchi discloses two devices, one that converts the light and one that transmits the light, as opposed to the claimed invention which comprises just a single transmission and photoelectric conversion. However, the Examiner disagrees with this argument. A transmission and photoelectric conversion device, as broadly claimed in claims 25 or 34, is read on by the device of Takeuchi as explained in the rejection above. It should be noted that it is the claims that define the claimed invention, and it is the claims, not the specification, that are anticipated or unpatentable. Therefore, the fact that the device of Takeuchi may be more sophisticated than that of the present invention is irrelevant. Furthermore, it appears that a transmission and photoelectric conversion device of the claimed invention should comprise two separate elements that perform two different functions (i.e. transmission and photoelectric conversion), respectively. It should be noted that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art.

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Pyo whose telephone number is (571) 272-2445. The examiner can normally be reached on Mon-Fri (with flexible hour), First Mon. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin Pyo/
Primary Examiner, Art Unit 2878